WISCONSIN ENDANGERED RESOURCES REPORT #134
STATUS OF THE TIMBER WOLF IN WISCONSIN
PERFORMANCE REPORT 1 JULY 2005 THROUGH 30 JUNE 2006

By Adrian P. Wydeven and Jane E. Wiedenhoeft

SUMMARY

This report covers activities conducted from 1 July 2005 through 30 June 2006, on wolf conservation in Wisconsin. The Wisconsin DNR reclassified wolves from endangered to threatened in 1999 and delisted wolves to protected wild animals on August 1, 2004. The U. S. Fish and Wildlife Service downlisted wolves to threatened on 1 April 2003, but, a federal district court ruling on 31 January 2005 caused Wisconsin wolves to be re-listed as endangered. In March 2006 the U.S. Fish and Wildlife Service began a new process to delist wolves in the Great Lakes region. The 1999 Wisconsin Wolf Management Plan determined wolf management in the state and this report follows the outline of the wolf plan to describe wolf management activities.

Twenty-three wolves were live-captured, and 17 were fitted with radio collars in 2005 in 15 different packs. Seventy-two radio tagged wolves were monitored during the study period. Mean territory size was 32.4 square miles for 18 adult wolves. The minimum count for the wolf population in winter 2005-2006 was 465 to 502 wolves in 115 packs, and included 449 - 485 wolves outside of Indian reservations. Twelve wolves being actively monitored, died during the period from the following mortality factors: 3 from disease, 4 shot, 1apparent poisoning, 1 vehicle collision, 2 euthanized at depredations and 1 from unknown trauma. A total of 85wolves were found dead in Wisconsin and included death from the following: 5 disease and infection, 1 drowning, 1 other wolves, 12 shot, 1 poisoned, 18 vehicle and train collisions, 36 euthanized at depredation sites, 4 unknown trauma, and 7 unknown. Mange caused most mortality from disease and was detected on 1 of 8 wolves examined in 2005. Reports of wolf observations were received from 50 Wisconsin Counties. Forty-four cases of wolf depredation on domestic animals occurred during the study period, and included death of 38 cattle, 1 horse, 16 dogs, and injury to 4 calves and 7 dogs. Forty-one wolves and 3 wolf-dog hybrids were live-trapped from farms, and 35 wolves and all hybrids were euthanized, plus nonlethal methods were used on many farms. Various other strategies for implementing the 1999 Wisconsin Wolf Management Plan were also conducted during the period.

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BUREAU OF ENDANGERED RESOURCES
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RECOVERY OF THE TIMBER WOLF
PERFORMANCE REPORT

1 July 2005 - 30 June 2006

Prepared by Adrian P. Wydeven and Jane E. Wiedenhoeft

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Timber or gray wolves (*Canis lupus*) were listed as Endangered in the Great Lakes region in 1967 and 1974 by the U.S. Fish and Wildlife Service (U.S. Fish and Wildlife Service 1992). The State of Wisconsin listed wolves as Endangered in 1975, reclassified them to Threatened in 1999, and delisted wolves to Protected Wild Animal on August 1, 2004. The Wisconsin Department of Natural Resources (WDNR) has monitored wolves since 1979. A recovery plan with a reclassification goal to Threatened status of 80+ wolves was completed in 1989 (Wisconsin DNR 1989), and a management plan was completed in 1999 (Wisconsin DNR 1999). The management plan sets a state delisting goal of late winter count of 250 wolves outside of Indian reservations, and a management goal of 350 wolves outside of Indian reservations. At the management goal, government trappers may conduct proactive population control activities, and public harvest of wolves may be considered when wolves are federally delisted. The plan included 14 management strategies that represent the general outline of this report.

The 1992 Federal Recovery Plan for the eastern timber wolf established reclassification goals of 80+ wolves for 3 years in Wisconsin, and a delisting goal of 100+ wolves for 5 years for Wisconsin and Michigan (U.S. Fish & Wildlife Service 1992). Federal delisting also required a stable population of 1251 to 1400 wolves in Minnesota, and approved management plans for each state. The Minnesota wolf population was 3020 wolves in 2004 (Erb and Benson 2004). In 2006, Michigan and Wisconsin shared nearly 900 wolves, and had exceeded the 100+ threshold for 13 years. On April 1, 2003 the U.S. Fish and Wildlife Service reclassified wolves to Threatened in Wisconsin and Michigan (Minnesota has been listed as Threatened since 1978), and other states in the Eastern Distinct Population Segment (EDP), but on January 31, 2005 a

federal district court invalidated the 2003 reclassification process and wolves in Wisconsin and elsewhere (except Minnesota) were re-listed as endangered. On March 27, 2006, the U. S. Fish and Wildlife Service began a process to remove Wisconsin, Michigan and Minnesota wolves off the list of federal endangered and threatened species as part of a Western Great Lakes Distinct Population Segment, and this process could be completed by early 2007, and would return all wolf management authority to the states in the DPS. In 2005 and 2006, while wolves were again listed as endangered, special permits or sub-permits were issued to Wisconsin and Michigan to allow the states to kill depredating wolves, but permits were lost both years due to lawsuits by animal welfare and environmental groups.

Personnel and funding

Funding for wolf conservation activity in Wisconsin was from the following: Federal Aid in Wildlife Restoration Project W-154-R; funds from the Nicolet-Chequamegon National Forest; Wisconsin Endangered Resources Fund (tax check-off and license plate); Timber Wolf Alliance (TWA); Timber Wolf Information Network (TWIN); USDA-Wildlife Services federal appropriations were used to fund depredation management and research of calf mortality factors; funds from research grant for Thomas Gehring, and Shawn Rossler at Central Michigan University, funds from research grants through University of Wisconsin - Madison supported research by Tim Van Deelen and Elizabeth Berkley, Defenders of Wildlife, National Wildlife Federation , and donations from private individuals.

Adrian Wydeven was the ecologist in charge of the project, and was assisted by project wolf technicians Ron Schultz, Sarah Boles and Jane Wiedenhoeft. DNR pilots conducting aerial monitoring of collared wolves included: John Bronson, Joe Sprenger, Mike Weinfurter, Phil Miller, Paul Anderson, and Dan Cardinal. Other DNR personnel that assisted extensively on wolf monitoring included Dick Thiel, Ellen Heilhecker, Wayne Hall, Dr. Julie Langenberg, Nancy Businga, Michele Windsor, Randy Jurewicz, Aaron Buchholz, Ken Jonas, Greg Kessler, Todd Naas, Bruce Bacon, Rich Wissink, Linda Winn, Pat Beringer, Tia Kropf and Mary Singsime. Buck Follis, Dave Ruid, Mark Kerr, and Barry Benson with the USDA-Wildlife Services conducted trapping of wolves for monitoring. Dead radio-collared wolves were necropsied by Dr. Nancy Thomas and Dr. Valerie Bochsler and others at the National Wildlife Health Center in Madison, and wolf necropsies were coordinated through Dr. Grace McLaughlin and Dr. Kathy Converse. Dead collared wolf specimens and some hybrids were sent to Paula Holahan at University of Wisconsin-Madison, and Paula assisted in identification of possible hybrids. Non-collared dead wolves were necropsied by the DNR Wildlife Health Team. Live trapping and field investigations of wolf depredations were conducted under the supervision of Jason Suckow and district supervisors Bob Willging and Charles Lovell of USDA-APHIS-Wildlife Services, as well as assistant district supervisor, Dave Ruid and the many wildlife specialists. Dr. John Shivik of USDA-Wildlife Services conducted research on calf mortality factors. Dan Eklund and other Forest Service employees assisted with wolf monitoring on national forest land. Don Reiter and Brenda Nordin monitored wolves on and near the Menominee Indian Reservation, and Tom Doolittle monitored on the Bad River Reservation. Dr. Lisa Naughton (University of Wisconsin - Madison) and Dr. Adrian Treves conducted attitude surveys toward wolves in Wisconsin. Shawn Rossler under Dr. Thomas Gehring of Central Michigan University conducted research on shock collars as a means of reducing wolf depredation. Elizabeth Berkley and Dr. Tim Van Deelen at the University of Wisconsin - Madison studied wolf/canid diets through fatty acid signatures. Over 120 volunteers conducted winter track surveys across northern and central Wisconsin, and many volunteers assisted on scouting, wolf trapping & handling, and summer howl surveys.

Job 106.1 WOLF MANAGEMENT ZONES

Four wolf management zones were created in the 1999 wolf management plan (Figure 1). Wolf populations and summary of wolf management activities are discussed for each zone below.

Zone 1 (18,384 square miles) represents the northern forest wolf range in Wisconsin, and in winter 2005-2006 consisted of 382-414 wolves including 94 packs and at least 10 loners. Packs occurred in all of the 21 counties in the zone, and public reports of wolf observations were received in all 21 counties. Fifteen dogs were killed and 6 injured in 20 cases in 7 counties, and involving 10 different packs. Livestock depredation included 25 cattle (23 calves) killed, 2 calves injured, and 1 horse (foal) killed on 12 farms in counties. Thirty wolves and 3 apparent wolf dog hybrids were trapped on farms; 4 pups were released at site, 26 wolves and 3 wolf-dog hybrids were euthanized. Average deer density in winter across the zone was 22 deer per square mile (range 12 -39 deer per square mile for deer management units), and was above the goal of an average of 19 deer per square mile. Wolf packs occupied 4562 square miles of the zone at a density of about 1 wolf per 11 square miles.

Zone 2 (4,521 square miles) represents the central forest wolf range, and contained 53-56 wolves in 14 packs and at least 2 loners in winter 2005-2006. The zone contains portions of 10 counties, but consists mainly of 7 counties that all contained packs. Public reports of wolf observations were received from 5 of these counties. One dog was killed by wolves in Jackson County and depredation occurred on a calf in Marquette County. No wolves were trapped and euthanized in the zone. Average deer density in winter in the zone was 36 deer per square mile (range to 32-35 deer per square mile); the goal for the zone is an average density of 27 deer per square mile. Wolf territories occupied 658 square miles of the zone at a density of about 1 wolf per 12 square miles.

Zone 3 (~18,000 square miles) represents wolf dispersal habitat and marginal wolf habitat in areas of mixed forest/farmland across central and southwest Wisconsin and includes portions of 33 counties. This area was not expected to be important wolf habitat, and was not expected to support many packs. In winter 2005-2006 at least 17 wolves occurred in the zone, mainly in areas near zones 1 and 2, and included 7 known packs and probably occasional loners traveling between zones 1 and 2. Packs were small and consisted of 2-4 wolves. Reports of wolf observations were received from at least 17 counties. Fifteen wolves were found dead in the zone, including 9 wolves euthanized at depredation sites; dead wolves were from Buffalo, Burnett, Chippewa, Dunn, Oconto, Polk, Portage, and Rusk counties. Extensive distribution of dead wolves and public reports of wolf observations indicate fairly regular travel of dispersers through the zone. Depredations were caused by the Long Lake and Sand Creek Packs and 3 different loners. Eleven cattle (9 calves killed, 1 injured and 1 cow killed) were attacked at 5 farms in 5 counties in the zone, and 11 wolves were trapped and 9 were euthanized on 4 of the farms. Wolf packs covered about 230 square miles in the zone, and occurred at an average density of 1 wolf per 12 square miles in occupied range.

Zone 4 (~16,000 square miles) represents portions of southern and eastern Wisconsin, and includes 28 counties in portions of the state that are mostly agricultural and urban areas. No packs were detected in the zone. Reports of wolf observations were received from 14 counties in the zone. Six suspected wolves were found dead in the zone, but 2 appeared to be wolf dog hybrids; dead wolves were found in Columbia, Grant, Kewaunee and Sauk Counties. Occasional occurrence of wolf-dog hybrids in the zone complicates attempts to determine distribution of

wolves. An apparent single animal in Columbia County (possibly a wolf-dog hybrid) killed 2 calves, injured 1 calf and injured a dog on 3 farms, as well as threatened other dogs and livestock in the neighborhood. Attempts to trap the depredating wolf or wolf-dog hybrid were not successful.

JOB 106.2 POPULATION MONITORING AND MANAGEMENT

Twenty-three wolves were captured in Wisconsin in 2005 and were released back into the wild, and 17 were fitted with radio collars (Table 1). Collared wolves were located in 15 different packs and one was an apparent loner. Captures include 10 adult males (mean 80.9 lbs. SD 8.9, range 70 to 100 lbs.), 3 adult females (66 lbs. & 70 lbs. for 2), 1 male pup, 7 female pups, and 1 unknown (self attaching collar).

A total of 72 collared wolves were monitored in Wisconsin during the study period (Table 2). Seventy-one wolves were monitored in 57 packs, thus about half the packs in the state were monitored by radio-telemetry during part of the study period. Twelve collared wolves currently being monitored died, and signals were lost on 9, one of which was found dead later in Menominee County, Michigan (554M). Wolves monitored in 2005-2006 included, 31 adult males, 27 adult females, 1 yearling male, 8 yearling females, 4 pup females, and 1 unknown (captured by self-attaching collar). The main areas used by collared wolves included 64 in Zone 1, 5 in Zone 2, and 3 in Zone 3.

Mean winter home range for 19 wolves with 20 or more radio locations was 31.5 mi^2, and was 32.4 mi^2 for 18 adults located 20 or more times (Table 2). Winter home range seemed to average slightly larger in northern Wisconsin (32.4) than in Zone 3 (24.0), but sample size was low. Winter home range areas ranged from 14 mi^2 for adult male M726M of the Magee Creek Pack to 64 mi^2 for adult male 522M of the Rainbow Lake Pack.

Dispersing Wolves

Wolf 462M, was captured as an adult male on 1 June 2003 in the Black Lake Pack area of Sawyer County. In fall 2004, he began traveling south of his home territory, traveling as far as 26 miles to the south in western Price County. Although he continued to visit his home territory, he also traveled east and south of the Black Lake area. It appeared that in winter 2004-2005, the Black Lake pack began to dissolve. On 13 July 2005, Wolf 462M was found dead along the Flambeau River, west of Fifield in Price County and 13 miles southeast of the Black Lake territory.

Wolf 505F, was captured as an adult female on 30 May 2004 in the Bootjack Lake Pack area of northwest Oneida County. In winter 2005-2006 she seemed to shift over to the Musser Creek area east of Phillips in Price County. The previous Musser Creek group was apparently eliminated in depredation control actions in summer 2005. On 19 December 2005, 505F was in the Bootjack Territory in Oneida with two other wolves, but by 9 January 2006 was in the Musser Creek area in Price County 12 miles to the east, also with two other wolves. She remained with 2 other wolves in the Musser Creek area in winter, and it was not clear if all three wolves had split off from the Bootjack Lake Pack together or if 505F met up with two other wolves after leaving the Bootjack Lake Pack. The Musser Creek Pack was not listed as a separate pack in the wolf count because 505F died on 3 May 2006, and 2 other wolves were found dead nearby, earlier in the spring.

Wolf 510F, was captured as an adult female on 18 March 2006 in the Noch Hanai Pack area east of Black River Falls. She remained in the general area through 5 April 2006 when she apparently dispersed northward. Wolf 510F was found on 31 May 2006 in the Beaver Dam Lake area of Ashland County 149 miles to the north of her last location, and 146 miles north of her original capture site. She roamed the Bibon Swamp and White River area in Bayfield and Ashland Counties in spring 2006.

Wolf 518M, was captured as an adult male in the Smoky Hill Pack of southwest Bayfield County on 31 May 2005. He was fitted with a VHF radio collar and an experimental shock collar (Rossler 2005). The wolf began spending

time in the Eau Claire Lakes in southeast Douglas County in early winter, and on 30 December 2005 was found severely injured in the southern portions of the Shoberg Lake Pack territory, and was euthanized. The last location was about 9 miles northwest of his original capture site.

Wolf 523M, was captured as an adult male in the Bearsdale Pack area of western Bayfield County on 24 May 2005. He was also fitted with both VHF and experimental shock collar (Rossler 2006). Wolf 523M remained mainly in the Bearsdale area, but appeared to begin to disperse in late August 2005, and was last detected on 31 August 2005 in northern Sawyer County, 14 miles to the southeast. He was again detected on 17 April 2006 in the Spirit Lake area of eastern Price County, about 90 miles southeast of his original capture. Wolf 523 remained in the area of east Price, northeast Taylor, and northwest Lincoln Counties throughout spring and summer.

Wolf 554M, was captured as an adult male on 18 May 2005 in the Dunbar Pack of northern Marinette County. He disappeared from the Dunbar Pack area after 25 November 2005, and was found shot to death on 29 January 2006 in Menominee County, Michigan 49 miles east of his original capture site.

Wolf 560M was captured as an adult male in the Brush Creek Pack area of Ashland County on 26 June 2005. He was detected 8 miles to the north on 29 June 2005, west of Copper Falls State Park. When next located on 18 July 2005, he was located 40 miles southeast of his capture location in northeast Price County. Wolf 560M was next found on 2 September 2005 in eastern Marathon County, 78 miles south of the July location and 114 miles southeast of his initial capture site. The wolf was not found again, but apparently was doing some extensive movements, and probably was not originally from the Brush Creek Pack.

Wolf M719m, was captured as a yearling male by a coyote trapper on 2 November 2003 in northwest Baraga County, Michigan and was monitored in his natal territory until 9 February 2005. Wolf M719 was detected in eastern Forest County, Wisconsin 65 miles south of his original capture site on 22 November 2005. The wolf remained in the Morgan Lake area of eastern Forest and western Florence County with another wolf throughout the study period.

Wolf M2701m, was captured as an adult male on 22 May 1998 in the Chaney Lake area of southwest Gogebic County, Michigan and eastern Iron County, Wisconsin. He was recaptured in this territory on 26 May 2001, but lost after 31 March 2004. The old male was detected to the southwest of his original territory, in the Murray's Landing Pack on 22 November 2005, 16 miles southeast of his original capture site, and remained in the Murray's Landing Pack area through spring with 3 other wolves. The male wolf was at least 10 years old by spring 2006.

Wolf 2715m, was captured as an adult male on 31 May 2001, in the Chaney Lake Pack along the Wisconsin/ Michigan border southeast of Ironwood. After 11 December 2001, wolf 2715 was lost from his home territory. He was detected in the Clam River area of southern Burnett and northern Polk Counties 124 miles to the southwest on 21 May 2003, where he was monitored through summer 2006, but was previously assumed to be wolf 460F. When wolf 460F was found dead 30 miles to the east in August 2006, and apparently had been dead for > 1.5 years, it was obvious that a different wolf lived in the Clam River area.

Wolf M3617m, was captured as an adult male on 2 June 2004 in Iron County, Michigan, north of Crystal Falls. He was lost after 3 November 2004. The male wolf was detected in the McArthur Pine area of eastern Forest County, Wisconsin on 5 April 2006 and 42 miles southeast of his original capture site. The male appeared to join the small pack in this area.

Wolf M6613f, was captured as a yearling female in eastern Ontonagon County, Michigan on 3 June 2004 , but was lost from her home territory after 20 September 2004. The wolf was detected by trail camera in eastern Menominee County, Wisconsin on 24 March 2006, and was detected from the air by radio telemetry on 24 April 2006, about 124 miles southeast of its original capture location. The wolf was found dead from an infection, near her den area on 5 May 2006, and her 5 pups were placed in captivity.

Buffalo County Female, a yearling or young adult wolf was killed by a vehicle in northwest Buffalo County, 27 October 2005 near the Tiffany Wildlife Area, and 53 miles west of the nearest pack.

Columbia County Male, an adult male was killed by a vehicle south of Portage along Interstate 90/94 on 20 May 2006, 33 miles south of the nearest pack to north (Caves Creek—possibly extinct), and 53 miles southeast of the nearest pack areas in the Necedah Wildlife Refuge.

Dunn County Male, a yearling male was killed by a vehicle on I-94 on 25 February 2006 in Dunn County, and 40 miles southwest or west of the nearest pack.

Grant County Male, an adult male was apparently shot to death and found on 30 October 2005 in western Grant County and 92 miles south of the nearest pack.

Kewaunee County Female, an adult female wolf was shot in northeast Kewaunee County, near the line with Door County on 19 March 2006. Reports of 1 or more wolves were received from this area in fall and winter 2005-2006. Her death site was located 47miles southeast of the nearest pack, but because this pack is across Green Bay, it would require at least twice as many miles to travel to this site.

Sauk County Male, an adult male was shot east of Baraboo on 18 May 2006. He was found 30 miles south of the nearest pack (Caves Creek—possibly extinct), and 46 miles from the nearest pack in Necedah National Wildlife Refuge.

Oconto County Male, a yearling male was killed along Highway 141 on 13 March 2006 in central Oconto County and about 50 miles southeast of the nearest known breeding pack.

Wolf Count Summary

Through radio track monitoring of radio collared packs, snow tracking of non-collared packs, and public and agency reports of wolf observations, a total statewide population count was obtained of a minimum of 465 to 502 wolves in winter 2004-2005. This included 452 to 489 wolves in 115 packs, and at least 13 loners (Table 3). We adjusted the winter 2004-2005 count of 425 to 455 (Wydeven et al. 2005) to 435-465, because during spring and summer surveys and depredation control activities in 2005, 5 additional packs of at least 2 each were detected that had been missed in the winter surveys. The adjusted count for winter 2005 included 113 packs, and total count of wolves outside of Indian reservations was 424-452. Using the bottom range of the count, the statewide wolf population increased 7% in 2006, and had increased 17 % in 2005. Average annual increase between 2002 through 2006 was 7%, compared to average annual increase of 20% from 1985 through 2002.

Average pack size was 3.9 to 4.3 wolves across the state, which was slightly higher than 3.8 to 4.1 wolves per pack observed in 2005 (Wydeven et al. 2005). The area occupied by territorial wolves in winter was estimated to cover 5450 mi^2, thus 458 to 493 territorial wolves occurred at a density of one wolf per 11.1- 11.9 mi^2 within occupied wolf range. DNR Pilots observed and detected 128 wolves at 456 radio locations, and 26 packs averaged 4.5 wolves per pack. Snow track surveys used to detect non-collared packs included 2843.8 miles by DNR trackers and 4896.8 miles by volunteers. Public and agency reports of wolf observations were also used to supplement other survey information and direct surveys (Table 6).

An estimated 151 to 222 pups existed in the winter wolf population. Using a mid point of 186 and an estimated 113 potential breeding packs, estimated pup survival to late winter 2006 from spring 2005 was 0.32 or 32 %. This is slightly higher than pup survival rate of 0.31 estimated in 2005 (Wydeven et al. 2005). Pup survival was moderate for Zone 1 (0.33), and Zone 2 (0.38), but very low for Zone 3 (0.06). At least 22 potential breeding packs (19%) had no apparent surviving pups by late winter. Only 2 of 7 potential breeding packs in Zone 3 appeared to have surviving pups in late winter, suggesting high pup mortality in more marginal wolf habitat.
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A total of 90 dead animals, initially considered wolf were detected in Wisconsin during the study period, and 4 wolves that had originated from Wisconsin died in Michigan and Minnesota (Table 4). Of these 90 canids, 85 were determined to likely be wolves (some genetic analysis still pending), and included 13 with radio collars, including 11 being actively monitored. Among the

Wisconsin wolves dying in Minnesota, a collared female was included that died within the edge of her territory (554F) and a pup held in captivity died after his mother (M6613F) died. Mortality for the 12 collared wolves being actively monitored included, 2 (17%) euthanized depredators, 4 (33%) shot, 1 (8%) apparent poisoning, 1 (8%) vehicle collisions, 3 (25%) disease and infection, and 1 (8%) unknown trauma (possibly other wolves) and euthanized. Among 85 dead wolves found in Wisconsin mortality factors included the following: 36 (42%) euthanized depredators, 12 shot (14%), 1 (1%) apparent poisoning, 18 (21%) vehicle & train collision, 5 (6%) disease & infection, 1 (1%) other wolves, 4 (5%) trauma from undetermined sources, 1 (1%) drowning, and 7 (8%) unknowns. Among the total sample, at least 79% of mortality was human caused, but among the actively monitored wolves, human caused mortality was 67%. Death from disease and illegal kill was mainly detected from radio-collared wolves. One of the oldest known age wolf found dead in the state was 237F, collared as a yearling on 4 May 1995, and found dead on 13 February 2006 (collar was no longer working), and was therefore about eleven years and 10 months old.

We updated information on all collared wolves found dead while actively monitored in the state and adjacent areas of Minnesota (Table 5). In the past we reported this data for all collared wolves, but the sample of actively monitored wolves is probably more representative of overall mortality in the population. There was an equal split between human caused and natural mortality. Illegal shooting (28%) and vehicle collisions (9%) represented the most important human-caused mortality factors. Disease (31%) and intraspecific strife (12%) were the most important natural mortality factors. Rates of kill and mortality factors changed over time. During the early 1980s, illegal kill was very high and accounted for the majority of the mortality (Wydeven et al. 1995). Vehicle collisions only became an important mortality factor in the 1990s, and in the future, control activities will probably become more important as mortality factors.

Statewide Wolf Distribution

Reports were received of 341 wolf observations from private citizens and agency personnel from 50 Wisconsin Counties (Table 6). These include only reports classified as “probable” and “possible”, but probably include some misidentifications. The number of reports increased from the last 2 study period (274 reports in 2004-2005, 272 reports in 2003-2004), but less than 2002-2003 (372). Highest reports were for the following counties: Iron (42), Price (35), Marinette (26), Douglas (23), and Vilas Counties (22). Distribution of observations by zones was 262 in Zone 1, 23 in Zone 2, 26 in Zone 3, and 30 in Zone 4. Although some of the reported wolf observations were perhaps misidentified, especially in zones 3 and 4, the death of 4 wolves in Zone 4 indicates that dispersing wolves were traveling through the area.

JOB 106.3 WOLF HEALTH MONITORING

Eight wolves were tested for two canid diseases, and examined externally for possible mange in 2005 (Table 7). Because Wisconsin has accumulated a wolf disease exposure database since the 1980's, the current health screening program for northern Wisconsin adult wolves is focused on diseases associated with significant mortality (mange) or for which there are fewer accumulated data (ehrlichiosis, Lyme disease). Blood samples from 8 adult wolves from northern Wisconsin counties through serologic analysis all showed evidence of exposure to the tick-transmitted disease agents of ehrlichiosis and Lyme disease. A high prevalence of exposure to these disease agents has been documented in Wisconsin wolves since 2001; this further sampling is helping us

explore age and geographic differences. Ehrlichiosis and Lyme disease have only rarely been reported as a cause of illness or death in wild canids such as wolves.

Only one of 8 wolves examined showed sign of mange, and the disease seemed less severe than previously observed. Only 4 wolves were detected that had died from mange.

Only 12 of 72 collared wolves were detected to have died while actively monitored in the 2005-2006 study period. The crude estimated survival for wolves would have been about 83%, which would be high for a wolf population. This would represent mainly wolves 1 year or older in age, compared to estimated survival rate of 32% for pups. The high survival rate for adults may be more representative of wolves in the core of wolf range, compared to wolves on the edge of wolf range where vehicle collisions and depredation control activities exert more of an impact on wolves.

JOB 106.4 HABITAT MANAGEMENT

Wolf program personnel continued working with public forest land to encourage maintaining areas of low road density and protecting den sites. Meetings attended included the following: Wisconsin Woodland Owners (10 Sept. 2005), County Forest Administrators (11 Nov. 2005), Ashland County Forest (4 Jan. 2006), and Flambeau State Forest (18 May 2006). Meetings were also held with staff from the Natural Heritage program to assure den site areas be protected from developments, and forest and wildlife management activities. The DNR wolf science committee updated the state wolf plan and made recommendations to remove special protection from rendezvous sites on public forest land, because monitoring efforts have not demonstrated the need for special protection as long as sound scientific management are used on forest lands.

JOB 106.5 WOLF DEPREDATION MANAGEMENT

Sixty-six cases of wolf depredation problems occurred during the 2005-2006 study period including 44 cases where injuries or death to domestic animals by wolves was verified; other cases were mainly threats or harassment and one human safety concern (Table 8). Depredations included 22 cases of depredation on dogs in which 16 dogs were killed and 7 were injured. Two dogs were killed and 4 injured walking near people's homes in rural area, and 14 dogs were killed and 3 injured in hunting and training hounds (bear, bobcat, and coyote hunting). Twenty-four cases of depredation occurred on 21 farms, resulted in death of 38 cattle (35 calves) one horse (foal) and 4 calves injured. Thirteen packs (11%) were involved in depredation on livestock and 11 packs (10%) were involved in depredation on dogs. Additionally 5 lone wolves depredated on livestock, 3 lone wolves depredated on dogs, and one loner (possibly a hybrid) depredated on both on livestock and dogs. A single wolf (or possibly a hybrid) attacked livestock on 3 farms and a dog on one of these farms in Columbia County in Zone 4; this was the first livestock and dog depredations verified in Zone 4; the wolf or hybrid was not captured despite extensive trapping attempts.

USDA-Wildlife Services attempted trapping on 20 farms and trapped 41 wolves and 3 wolf-dog hybrids on 14 farms. Thirty-five wolves and all the hybrids were euthanized and 6 pups were released back into the wild. One pup was fitted with a radio collar. USDA-Wildlife Services also provided technical assistance, and provided non-lethal devices such as flashing lights, fladry, and noise devices, especially on farms with threats and harassment. Central Michigan University

placed shock collars on wolves on 2 farms, and although one farm did have a depredation, the offending wolves may have been from a different pack than the one with a shock collar.

JOB 106.6 WOLF EDUCATION PROGRAMS

During the study period the project ecologist gave 22 talks to 873 people. Other biologists and technicians giving talks included the following (talks/ number of people): Dick Thiel (11/ 1238), Michelle Hefty (4/ 122), Michele Windsor (4/ 130), Rich Wissink (2/ 75), Greg Matthews (1/ 60), Cindy Mueller (15/ 817), David Ruid (USDA-WS, 9/ 420), Scott Pearson (USFS, 2/ 34), Mike Peczynski (USFS, 2/61), Gary Dunsmoor (4/ 80),and Jane Wiedenhoeft (5/ 145) for a total of 59 talks to 3182 people. Thirteen people in Timber Wolf Alliance (TWA) gave 55 talks for 2788 people. Talks by DNR Wolf Program personnel included training 20 TWA volunteers at a summer workshop, and 110 volunteer trackers at 4 workshops. Wolf program personnel and volunteers handed out information and answered questions from booths at the Wisconsin Citizen Based Monitoring Workshop in October 2005 (~50 people), and Klondike Days in February 2006 (~350 people). The WDNR, US Forest Service and other agencies cooperated with TWA to distribute over 6000 educational posters in Wisconsin during Wolf Awareness Week in October 2005. The wolf program ecologist attended 3 meetings with TWA to coordinate wolf education activities in the state. Media contacts by the project ecologist included 103 interviews/contacts including 46 newspaper, 23 radio, 10 TV, 4 magazine, 1 film producer, and 3 wire service interviews. News releases were developed on dog and livestock depredation, closure of coyote season during deer hunt, federal delisting proposal and hearings loss of federal permit issued for wolf depredation management and issuance of new permit, and new population count. Three progress reports and two annual reports were produced and distributed and placed on the DNR Wolf Web site, http://dnr.wi.gov/org/land/er/publications/wolfreports/, and DNR Wisconsin Wildlife Survey reports website, http://dnr.wi.gov/org/land/wildlife/harvest/harvest.htm . The DNR Wolf web site also contained information on wolf depredation on farms, reduction of conflicts with hunting dogs, updated wolf distribution maps, and information on the Volunteer Carnivore Tracking program.

JOB 106.7 LAW ENFORCEMENT

Project personnel assisted WDNR conservation wardens and USFWS special agents investigating 13 illegal kills by collecting carcasses and other evidence, background information, transporting carcasses, and assisting on preparations in news releases. A man who illegally killed a wolf in the Menominee Indian reservation in March 2005, was fined a total of $3489 for illegal wolf kill and trespassing on the reservation, http://dnr.wi.gov/org/caer/ce/news/rbnews/2006/020706ner1.htm

The coyote closed area during the firearm deer season was monitored during the hunting season. A news release was issued on the closed season for coyotes and protective status of wolves prior to the deer hunting season. Extra flights were flown on radio collared wolves to detect possible shootings.

JOB 106.8 INTERAGENCY COOPERATION AND COORDINATION

The Wisconsin Wolf Science Committee met 26 July 2005, 21 September 2005, and 10 May 2006 to discuss wolf depredation guidelines, wolf plan updates, and other wolf management

issues. The wolf science committee included staff from Wisconsin DNR, Wisconsin Department of Agriculture, Trade & Consumer Protection, University of Wisconsin Extension, U.S. Forest Service, USDA-Wildlife Services, Great Lakes Indian Fish and Wildlife Commission (GLIFWC), U.S. Fish and Wildlife Service, Wisconsin County Forests, and a private veterinarian.

Meetings were held with the Wisconsin Wolf Stakeholders on 15 October 2005, and 22 April 2006 to discuss the state wolf plan, delisting efforts, public attitudes, and other wolf management issues. The Wolf Stakeholders consisted of a diverse group of interested parties including hunting groups, environmental groups, animal welfare groups, farm groups, tribes, educators, and private citizens.

A meeting was held on 21 April with biologists, technicians, and volunteers to tabulate wolf numbers, plan summer surveys, and discuss other aspects of wolf surveys in the state. The Midwest Wolf Stewards met in Watersmeet on 26-27 April 2006 to review wolf management and research among the 3 Great Lakes states, and included involvement from Wisconsin DNR, Michigan DNR, Minnesota DNR, Ontario Ministry of Natural Resources, U.S. Fish and Wildlife Service, USDA-Wildlife Services, Michigan Technological Institute, Central Michigan University, University of Wisconsin-Madison, GLIFWC, National Wildlife Federation, Wildlife Science Center, Timber Wolf Alliance, Wildlife Conservation Society, and others. The project ecologist met with other members of the Eastern Gray Wolf Recovery team on 6 October 2005 and 2 May 2006 to discuss delisting, special permits, and post-delisting monitoring.

The project ecologists, along with other Wisconsin DNR officials, and officials from Minnesota, Michigan, Idaho, Montana, and Wyoming met with officials from the U.S. Fish and Wildlife Service and Department of the Interior on 4 August 2005 to discuss options for delisting gray wolves in recovered populations. The three Great Lakes state requested that delisting for their region be kept separate from other national delisting efforts, and focus just on the Great Lakes wolf population.

Other coordination talks and meetings attended by wolf program personnel included some of the following: DNR central Wisconsin wolf management meeting (31 August 2005); Conservation Congress Wolf Advisory Committee (23 September 2005); Great Lakes Wolf Symposium at The Wildlife Society meeting (29 September 2005); USDA-Wildlife Services research in Wisconsin (20 January 2006); wolf depredation management concerns with DNR, USDA-WS, Lac du Flambeau Band Chippewa, and Ho-Chunk (14 February 2006); meeting with Bad River Band Chippewa (22 February 2006); and federal hearing for delisting wolves in the Great Lakes Distinct Population Segment (10 May 2006).

JOB 106.9 PROGRAM GUIDANCE AND OVERSIGHT

A meeting was held with officials of Wisconsin, Michigan, Minnesota, Idaho, Montana, Wyoming, U.S. Fish and Wildlife Service, and Department of the Interior on 4 August 2005, to discuss strategies for delisting recovered wolf populations. Based on that meeting, recommendations were made to delist the Great Lakes region wolf population. The U.S. Fish and Wildlife Service on 27 March 2006 announced a delisting effort for the Great Lakes Distinct Wolf Population Segment, including the states of Wisconsin, Michigan, and Minnesota, as well as portions of North Dakota, South Dakota, Iowa, Illinois, Indiana, and Ohio. http://www.fws.gov/midwest/wolf/2006pr_dl/index.htm

A public hearing was held in Wausau on 10 May 2006 to allow comments on delisting (40 attending and 12 commented). Public hearings were also held in Michigan and Minnesota, and public comments were received through 26 June 2006. Potentially, federal delisting could be completed for the region in early 2007.

Meetings were held throughout the study period to conduct an update of the 1999 wolf plan. The Wolf Science Committee met 26 July 2005, 21 September 2005, and 10 May 2006, and prepared a draft wolf plan update, with assistance from the Wolf Stakeholder Committee, and Conservation Congress Wolf advisory committee. The draft plan update was presented to the Natural Resource Board on 28 June 2006. The wolf plan update included new information on wolf management and recommendations to extend depredation control trapping distances to 1 mile from depredation sites in Zone 1, and eliminate special protection for rendezvous sites. The Natural Resources Board accepted the wolf plan update, but requested additional information on wolf depredation be added.

JOB 106.10 VOLUNTEER PROGRAMS

Volunteer help continued to be important to wolf management in the state including population surveys, education and outreach, and advisory committees through the Wolf Stakeholders group and a new Conservation Congress Wolf advisory committee, which held its first meeting 23 September 2005. Thirteen volunteer speakers with TWA gave 55 talks to 2788 people. About 110 volunteers attended training on the volunteer tracking program, and 120 trackers surveyed 4897 miles in 67 survey blocks. Volunteers averaged 3.7 surveys per block (~ 200 square mile area), surveying 73.1 miles of road and spent an average of 13.4 hours surveying each block. At the beginning of the deer hunting season, volunteers contacted 248 hunters across northern Wisconsin to share information on wolves. Volunteers also assisted with wolf trapping, radio collaring, scouting for wolf sign, howl surveys, purchase of radio collars, and manning of education booths at sports shows and events.

JOB 106.11 WOLF RESEARCH

The Wisconsin DNR cooperated on several research projects on wolves in the state.

GIS analysis was conducted on assessing wolf habitat in Wisconsin. Kerry Marten is conducting research on habitat use of dispersing wolves in Wisconsin with Lisa Naughton, and Adrian Treves. Kerry hopes to build on GIS analysis of wolf pack habitat previously conducted in Wisconsin (Mladenoff et al. 1995, 1999). Dave Mladenoff at University of Wisconsin-Madison, worked on updating GIS assessment of wolf habitat with Jane Wiedenhoeft to look at some of the newly colonized areas in the late 1990s and into the 2000s.

Shawn Rossler and Thomas Gehring of Central Michigan University conducted research testing shock collars on wolves as a tool for reducing wolf depredation as a follow up on research by Hawley (2005). They have been testing dog shock collars on wolves as a means for altering movements and behavior to discourage depredation on livestock (Rossler 2006).

The Wisconsin DNR wolf workers Adrian Wydeven, Randy Jurewicz, Ronald Schultz, and Jane Wiedenhoeft continued ongoing research with the National Wildlife Health Center (NWHC) in Madison with Grace McLaughlin, Valerie Bochsler, and Nancy Thomas, and with DNR Wildlife

Health including Julie Langenberg and Nancy Businga. NWHC necropsied radio collared wolves and federal legal cases, and the WDNR Wildlife Health Staff necropsied most non-collared wolves found dead in the state.

Research with Paula Holahan (University of Wisconsin), Nancy Thomas, and Adrian Wydeven continued on osteopathology of wolves that have died in Wisconsin. Attempts will be made to correlate pathological conditions on skeletons of wolves with necropsy results and field conditions. Paula Holahan also investigated structural and anatomical differences between wolves and wolf-dog hybrids.

Dorothy Ginnett of the University of Wisconsin-Stevens Point conducted research on heartworm in wolves and other canids with Jerold Thies. Heartworm occurrence was examined by serological tests and necropsies of dead wolves and other canids.

Timothy Van Deelen, assistant professor at University of Wisconsin – Madison, began research with graduate student Elizabeth Berkley on use of quantitative fatty acid signatures to determine diet of wolves in Wisconsin (Iverson et al. 2004). Analysis will include examination of fatty acids in huskies in captivity with known diets and examinations of samples from wild wolves.

John Shivik with USDA-Wildlife Services conducted research on cause of death of "missing calves", and attempted to determine the role of wolves and other predators in the death and disappearance of these animals.

Presentations were prepared on various aspects of wolf research and management that were presented at a symposium on Wolf Recovery in the Great Lakes Region at the Wildlife Society meeting in Madison, Wisconsin on 29 September 2005. Work has begun to organize the symposium into a book on the successful recovery of wolves in the Great Lakes, with Adrian Wydeven and Tim Van Deelen coordinating the effort.

The wolf program produced several other reports during the study period. The Wisconsin Wolf Population in 2004-2005 was published in the Wisconsin Wildlife Surveys (Wydeven and Wiedenhoeft 2005). Progress reports on wolf population monitoring were produced in fall, end of year/mid winter, and spring.

JOB 106.12 WOLF-DOG HYBRIDS AND CAPTIVE WOLVES

Fourteen cases of suspected wolf-dog hybrid incidents were reported during the study period (Table 9). These probably represent a minimum of the incidents, because not all are reported to WDNR, and sometimes the animals are not properly identified. Wolf-dog hybrid problems occurred in 12 Wisconsin counties. In many cases hybrids create busy work for DNR employees, or initiate legal investigations, but at least 2 cases involved hybrids responsible for depredation on domestic animals, and at least one involved a hybrid acting aggressively toward humans. A large breeding operation in Burnett County was closed down due to death of the owner, and 19 hybrids were sent toColorado
http://www.kstp.com/article/stories/S16579.html?cat=1
Work is still underway to establish WDNR regulations on wolf-dog hybrids.

JOB 106.13 WOLF SPECIMEN MANAGEMENT

Attempts continue to try to necropsy most wolves dying in the state. The National Wildlife Health Center continued necropsies on collared wolves dying in the state because the lab has developed extensive data sets on necropsies of most collared wolves dying in the state since the early 1980s. The Wisconsin DNR Wildlife Health Lab necropsied most non-collared wolves, although only a subset of wolves removed from depredation sites were examined since the beginning of 2006 because of the large volume of depredating wolves handled in recent years. The DNR Wildlife Health team only examined wolves if they were not too decomposed and did not examine animals that appeared to be hybrids. Hybrids and most specimens of collared wolves were eventually deposited with the University of Wisconsin-Madison, Zoology Museum Other wolf specimens were made available for natural areas, DNR buildings, tribal offices and spiritual use, and for use by wildlife educators. Randy Jurewicz maintained a list of parties interested in wolf specimens, and distributed them when they became available. Wolf and wolf-dog hybrid specimens handled by region included, 69 Northern Region, 12 West Central Region, 4 Northeast Region, 4 South Central Region, and 1 Southeast Region.

JOB 106.14 ECOTOURISM

Workshops by the Timber Wolf Alliance, Timber Wolf Information Network, and Sandhill Outdoor Skills Center brought people into communities of Drummond, Tomahawk, and Babcock to explore wolf habitat and supporting local businesses. Wolf programs were also given at the Cable Natural History Museum, State Parks and Forests, and National Park Service, and these programs were part of the attractants for people to visit these areas. On 11 July 2005, a Natural Resource Foundation tour was given for 38 people in the Clam Lake area, which included a tour of wolf habitat, dinner at a local supper club, and howl survey in the forest after dark. The Wisconsin DNR continued support and monitoring of ecotourism activities involving wolves in forested portions of the state.

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